

## DESCRIPTION

## PRODUCT COVERED:

USR, CNR - Linear Power Supplies, Models CP197, F5-25/OVP, F15-15, F24-12, and G5-35/OVP, followed by -A, suffix after the first hyphen may be replaced by -5XX or -7XX where X is 0-9. **Model number may be followed by "G" or SXXX or SXXXG where X indicates letters and/or number 0-9.**

## ELECTRICAL RATINGS:

Model	Input			Output, (dc)	
	V	A	Hz	V	A
CP197	100/120/220/240	6.5/6.5/3.25/3.25	50/60	5	50
F5-25/OVP	100/120/220/240	3/3/1.5/1.5	50/60	5	25
F15-15	100/120/220/240	6/6/3/3	50/60	15 or 12	15 16
F24-12	100/120/220/240	6/6/3/3	50/60	24 or 28	12 10
G5-35/OVP	100/120/220/240	4/4/2/2	50/60	5	35

## ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

**This component has been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, CSA/UL 60950-1, First Edition, dated April 1, 2003, Sub-clause 2.10, which would cover the component itself if submitted for Listing.**


The equipment is considered: For building in, Class I (earthed), intended for use on a TN power system.

Conditions of Acceptability - When installed in the end-use equipment, considerations shall be given to the following:

1. **This component has been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, CSA/UL 60950-1, First Edition, dated April 1, 2003, Sub-clause 2.10, which would cover the component itself if submitted for Listing.\***
2. A suitable electrical and fire enclosure shall be provided.
3. The terminals and connectors are suitable for factory wiring only.
4. This power supply was evaluated for connection to a TN power system.
5. The products were tested on a 20 A branch circuit. If used on branch circuit greater than this, additional testing may be necessary. This power supply is considered a Class I product. The power supply shall be properly bonded to the main earthing termination in the end use.
6. Bonding terminals provided on this equipment have not been evaluated as protective earthing terminals.
7. All secondary output circuits for all models are SELV and are not hazardous energy levels, except for Models F5-25/OVP and G5-35/OVP.
8. Magnetic device (e.g. transformer) T1 employs an (OBJY3), electrical insulation system designated Class B.
9. The output is considered SELV.
10. These power supplies have been evaluated for use in a 25 and 50°C ambient in accordance with the manufacturer's specifications. The units were loaded to 100% normal rated load for 25 and 50°C, except for Model F24-12 and CP197. At 25°C convection cooling, maximum load are 75% (F24-12) and 70% (CP197) of normal load. At 50°C, the following units required forced air cooling in order to comply with standard requirements.

<u>Model</u>	<u>Required LFM</u>
F5-25/OVP	200
G5-35/OVP	100
F15-15	250
F24-12	100
CP197	300

11. The maximum working voltage present is 254 V rms, 368 V pk. The Electric Strength Tests in the end product shall be based on this value.
12. Transformer Abnormal Operation Tests were conducted with UL Listed fuses rated 250 V, 1.5 A for Model F5-25/OVP; 250 V, 3 A for Models F24-12 and F15-15; 250 V, 2 A for Model G5-35/OVP; and 250 V, 4 A for Model CP197A connected in the ungrounded conductor circuit.
13. The equipment has been evaluated for use in a Pollution Degree 2 environment.

Product	Linear AC/DC power supply
Applicant	Bel Fuse Inc. 206 Van Vorst St. Jersey City, NJ 07302 USA
Manufacturer	Bel Fuse Inc. 206 Van Vorst St. Jersey City, NJ 07302 USA
Factory	BPS Asia Pacific Electronics (Shenzhen) Co., Ltd. Building# 6, Nanming Road, Gongming Town Huahong Xintong Industrial Park Guangming District, Shenzhen 518108 China <input type="checkbox"/> See next page(s)
Ratings	6/3.0A 100/120/220/240V 50/60Hz
Trade mark	 a bel group
Model / Type Ref.	F15-15, F24-12
Principal characteristics	Open frame power supply for building-in. Output ratings see the test report. The model name may be followed by suffix -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9). Model name may be followed by "G" or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options. <input type="checkbox"/> See next page(s)
A sample of the product was tested and found to be in conformity with	OFF EN 60950-1:2006;A11;A1;A12;A2
Validity	This certificate documents conformity with the standards shown, and also applies as license for use of Nemkos name and certification mark. The certificate and license is valid as long as the applicable conditions are complied with, and provided that any changes to the product are notified to Nemko for acceptance prior to implementation. New standards or amendments to the standards may imply that the product design must be updated and/or that re-testing and re-certification is necessary.
Additional information	<input type="checkbox"/> See next page(s)  The abovementioned certified equipment complies with current regulatory requirements regarding electrical safety in Norway and other EU/EEA member states, as far as this can be checked. Compliance with requirements regarding building-in, protection against electric shock and

Date of issue 08-07-2015



Juan Z. Kleppenes  
Certification Department

**Nemko AS**  
Gaustadalléen 30, P.O. Box 73 Blindern, 0314 Oslo, Norway  
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ENTERPRISE NUMBER NO974404532

Electromagnetic Compatibility (EMC) must be checked when the equipment is built-in a completed product or forms a part of a complete system.

Additional model(s)

See next page(s)

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ENTERPRISE NUMBER NO974404532

Product	Linear AC/DC power supply
Pos. No	1
Model / Type Ref.	F5-25/OVP
Trade mark (if different from page 1)	
Rating	3/1.5A 100/120/220/240V 50/60Hz
Principal characteristics	Open frame power supply for building-in. Output ratings see the test report. The model name may be followed by suffix –A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9). Model name may be followed by “G” or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.
Product	Linear AC/DC power supply
Pos. No	2
Model / Type Ref.	G5-35/OVP
Trade mark (if different from page 1)	
Rating	4/2.0A 100/120/220/240V 50/60Hz
Principal characteristics	Open frame power supply for building-in. Output ratings see the test report. The model name may be followed by suffix –A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9). Model name may be followed by “G” or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.
Product	Linear AC/DC power supply
Pos. No	3
Model / Type Ref.	CP197
Trade mark (if different from page 1)	
Rating	6.5/3.25A 100/120/220/240V 50/60Hz
Principal characteristics	Open frame power supply for building-in. Output ratings see the test report. The model name may be followed by suffix –A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9). Model name may be followed by “G” or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.

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ENTERPRISE NUMBER NO974404532

**CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC**Product  
ProduitName and address of the applicant  
Nom et adresse du demandeurName and address of the manufacturer  
Nom et adresse du fabricantName and address of the factory  
Nom et adresse de l'usineNote: When more than one factory, please report on page 2  
Note: Lorsque il y plus d'une usine, veuillez utiliser la deuxième pageRatings and principal characteristics  
Valeurs nominales et caractéristiques principalesTrademark (if any)  
Marque de fabrique (si elle existe)Type of Manufacturer's Testing Laboratories used  
Type de programme du laboratoire d'essais constructeurModel / Type Ref.  
Ref. De typeAdditional information (if necessary may also be reported on page 2)  
Les informations complémentaires (si nécessaire, peuvent être indiqués sur la deuxième page)

A sample of the product was tested and found to be in conformity with

Un échantillon de ce produit a été essayé et a été considéré conforme à la

As shown in the Test Report Ref. No. which forms part of this Certificate

Comme indiqué dans le Rapport des essais numéro de référence qui constitue partie de ce Certificat

This CB Test Certificate is issued by the National Certification Body  
Ce Certificat de essai OC est établi par l'Organisme **National de Certification**

Linear AC/DC power supply

Bel Fuse Inc.  
206 Van Vorst St.  
Jersey City, NJ 07302  
USABel Fuse Inc.  
206 Van Vorst St.  
Jersey City, NJ 07302  
USABPS Asia Pacific Electronics (Shenzhen) Co., Ltd.  
Building# 6, Nanming Road, Gongming Town Huahong  
Xintong Industrial Park  
Guangming District, Shenzhen 518108  
China Additional information on page 2

6.5/3.25A 100/120/220/240V 50/60Hz



CP197

Open frame power supply for building-in. Output ratings see the test report. The model name may be followed by suffix -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9). Model name may be followed by "G" or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.

 Additional information on page 2

IEC 60950-1(ed.2);am1;am2

289466

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Xintong Industrial Park  
Guangming District, Shenzhen 518108  
China Additional information on page 2

6/3.0A,100/120/220/240V 50/60Hz



F15-15, F24-12

Open frame power supply for building-in. Output ratings see the test report. The model name may be followed by suffix -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9). Model name may be followed by "G" or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.

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China Additional information on page 2

3/1.5A, 100/120/220/240V 50/60Hz



F5-25/OVP

Open frame power supply for building-in. Output ratings see the test report. The model name may be followed by suffix -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9). Model name may be followed by "G" or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.

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IEC 60950-1(ed.2);am1;am2

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4/2.0A 100/120/220/240V 50/60Hz



G5-35/OVP

Open frame power supply for building-in. Output ratings see the test report. The model name may be followed by suffix -A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9). Model name may be followed by "G" or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.


 Additional information on page 2



IEC 60950-1(ed.2);am1;am2

289466



<p><b>TEST REPORT</b>  <b>IEC 60950-1</b>  <b>Information technology equipment – Safety –</b>  <b>Part 1: General requirements</b></p>	
<b>Report Number.</b> .....	289466
Date of issue .....	6 July 2015
Total number of pages.....	48
<b>Applicant's name</b> .....	Bel Fuse Inc.
Address .....	206 Van Vorst St., Jersey City, NJ 07302
<b>Test specification:</b>	
Standard.....	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
Test procedure .....	CB-Scheme
Non-standard test method .....	N/A
<b>Test Report Form No.</b> .....	IEC60950_1F
Test Report Form(s) Originator.....	SGS Fimko Ltd
Master TRF .....	Dated 2014-02
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<b>General disclaimer:</b>	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.</p>	

<b>Test item description</b> .....	Linear AC/DC power supply
Trade Mark .....	 <small>a bel group</small>
Manufacturer .....	Same as Applicant
Model/Type reference.....	Linear F Case Series CP197, F5-25/OVP, F15-15, F24-12, G5-35/OVP (may be followed by suffix –A. Suffixes after the first hyphen may be replaced by -5XX or -7XX where X is 0-9). Model name may be followed by “G” or SXXX or combinations of different options; where X is from 0-9, indicating non-safety critical options.
Ratings .....	Inputs:
F5-25/OVP.....	100 / 120 / 220 / 240 V, 3/1.5A, 50/60 Hz
F15-15.....	100 / 120 / 220 / 240 V, 6/3.0A, 50/60 Hz
F24-12.....	100 / 120 / 220 / 240 V, 6/3.0A, 50/60 Hz
G5-35/OVP.....	100 / 120 / 220 / 240 V, 4/2.0A, 50/60 Hz
CP197.....	100 / 120 / 220 / 240 V, 6.5/3.25A, 50/60 Hz

<b>Testing procedure and testing location:</b>		
<hr/>		
<b>CB Testing Laboratory:</b>	<b>Nemko USA Inc.</b>	
Testing location/ address..... :	<b>2210 Faraday Ave. Suite 150, Carlsbad, CA 92008, USA</b>	
<hr/>		
<b>Associated CB Testing Laboratory:</b>		
Testing location/ address..... :		
Tested by (name + signature) :	Eli Madrigal	
Approved by (name + signature):	Jeff Busch	

<b>Report History:</b>
Original report

**List of Attachments (including a total number of pages in each attachment):**

- Attachment 1:** European Group Differences and National Deviations ..... 78 pages  
 Documented deviations contain individual national documents for several European countries that are included in the European Group Deviations. The European Group Difference: EN60950:2006/A11:2009/A:2010/A12:2011/A2:2013 are considered "Normative". The individual national documents (Denmark, Finland, Germany, Ireland, Norway, Spain, Sweden, Switzerland and United Kingdom) are considered "informative" and included at the manufacturer's request.
- Attachment 2:** Miscellaneous Documentation, e.g. Photos, User's Manual, Schematic etc. .... 14 pages  
 (Not for publication – Engineering use only)

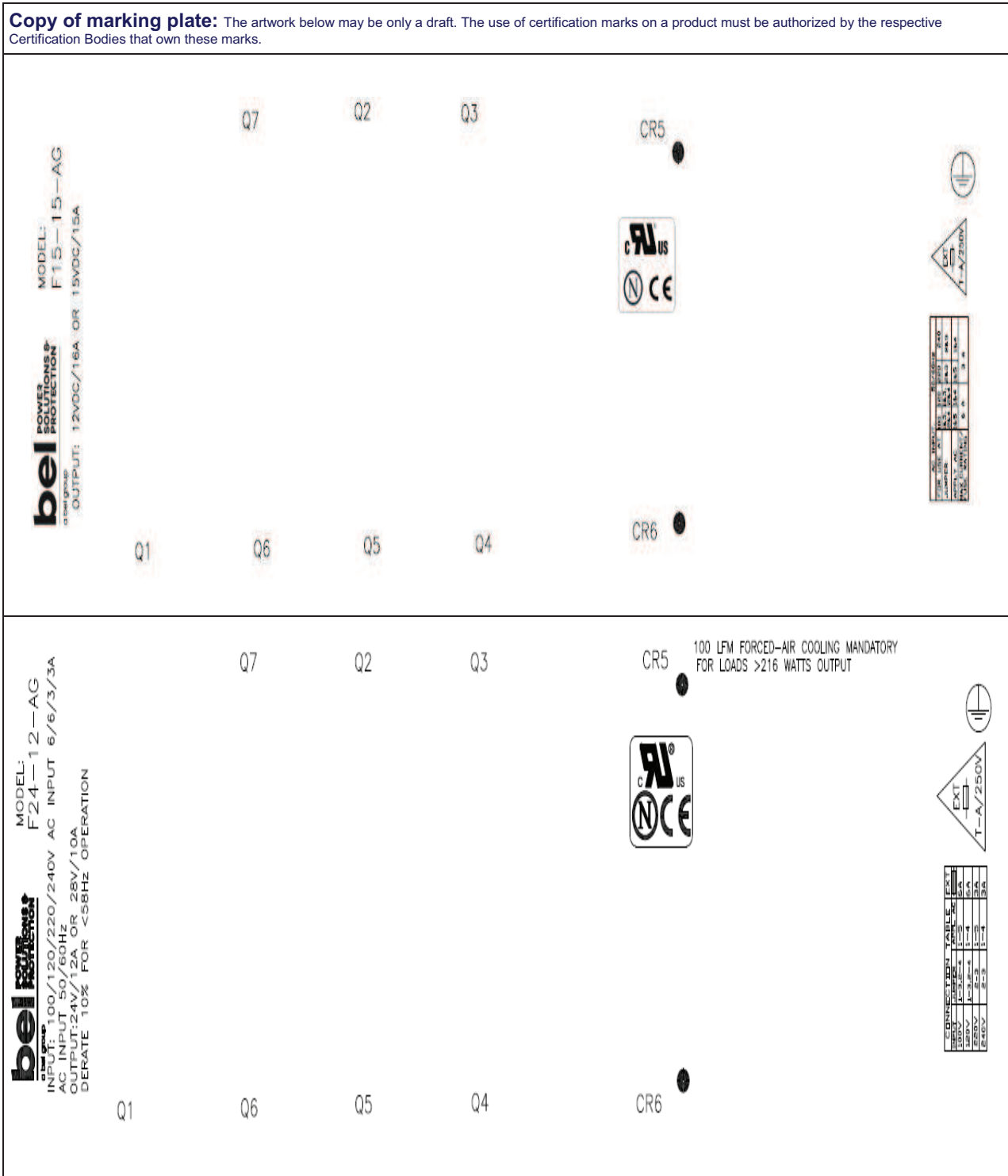
**Summary of testing**

General;	All comments relate to all models, unless specifically stated.
Power supply;	These equipment are open frame, Class I AC/DC Linear power supplies with universal AC input and single DC voltage output for building-in. This report covers multiple models and all comments / tests apply to all models unless otherwise indicated. Testing was conducted on various models as indicated.
1.5, 3.2.5; Power supply cord set.	A power supply cord set is not provided with the power supply. A power supply cord set, complying with the national regulations of the country in which the product is to be sold, shall be provided with the end-use equipment.
1.7.2; Safety instructions.	Instructions and equipment markings related to safety are to be provided in a language, which is acceptable in the country in which the equipment is to be sold. English language verified.
1.7.2.4; IT power distribution systems.	The equipment complies with the requirements for connection to the Norwegian IT power systems. The following information should be given (but is not required) in the installation instruction: "This product is also designed for IT power system with Phase to Phase voltage 230V."
2.7.4; Number and location of protective devices.	In Norway, IT power distribution system is used. Equipment with a single protective device is accepted in Norway. Other countries may have additional requirements.
2.7.6; Warning to service personnel.	After operation of the protective device, the equipment is still under voltage if it is connected to an IT-power system. A warning is required for service personnel. Norway does not require this warning.
5.2: Electric Strength test	Increased test voltages for Basic insulation applied to the equipment, based on measured working voltages.

<b>Summary of testing:</b>	
<b>Tests performed</b> (name of test and test clause): 1) Input Test ..... 1.6.2 2) Durability Test ..... 1.17.11 3) SELV Reliability Test ..... 2.2 4) Protective Bonding Test ..... 2.6.3.4 5) Humidity Test ..... 2.9.2 6) Working Voltage Measurement ..... 2.10.2 7) Hazardous Voltage Measurement ..... 2.10.2 8) Heating Test ..... 4.5.1 9) Touch Current Test ..... 5.1 10) Electric Strength Test ..... 5.2.2 11) Component Failure Test ..... 5.3 12) Abnormal Operation Test ..... 5.3 13) PS Output Overload and Short Test ..... 5.3 13) Transformer Overload Test ..... 5.3, Annex C	<b>Testing location:</b>  <b>See page 2</b>

<b>Summary of compliance with National Differences:</b>
<b>List of countries addressed</b> Australia (AU), Canada (CA), Denmark (DK), Finland (FI), Germany (DE), Ireland (IE), Israel (IS), Japan (JP), Korea (KR), Norway (NO), Singapore (SG), Spain (ES), Sweden (SE), Switzerland (CH), United Kingdom (GB), United States of America (US), Ukraine (UK)
Additional National Differences not published by the IECCE: Singapore: Consumer Protection Information Booklet, 2002 Edition, (Ver. 4.1).
Austria (AT) and Slovenia (SI) have been considered per European Group Differences and National Differences.
<input checked="" type="checkbox"/> <b>The product fulfils the requirements of:</b> EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013

**Copy of marking plate:** The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective Certification Bodies that own these marks.



<b>Test item particulars:</b>	
Equipment mobility .....	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains.....	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input checked="" type="checkbox"/> not directly connected to the mains Evaluated for 2000m, Class I Switch mode power supply for building-in. To be evaluated in the end use.
Operating condition .....	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location .....	<input type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category (OVC) .....	<input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other:
Mains supply tolerance (%) or absolute mains supply values .....	-10%, +6%
Tested for IT power systems .....	<input checked="" type="checkbox"/> Yes (Norway only) <input type="checkbox"/> No
IT testing, phase-phase voltage (V) .....	230
Class of equipment .....	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A) .....	To be evaluated at end use
Pollution degree (PD) .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class .....	IP20
Altitude during operation (m) .....	2000 m
Altitude of test laboratory (m) .....	94m, sea level
Mass of equipment (kg) .....	8.55 kg
Temperature, Ambient (°C).....	50°C maximum

<b>Possible test case verdicts:</b>	
- test case does not apply to the test object.....	N/A
- test object does meet the requirement .....	P (Pass)
- test object does not meet the requirement .....	F (Fail)

<b>Testing</b> .....	:
Date of receipt of test item .....	June 2015
Date (s) of performance of tests.....	June 2015

**General remarks:**

"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a  comma /  point is used as the decimal separator.

**Manufacturer's Declaration per sub-clause 6.2.5 of IEC 60950-1:**

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....

Yes  
 Not applicable

**When differences exist; they shall be identified in the General product information section.**

**Name and address of factory (ies) .....**

BPS Asia Pacific Electronics (Shenzhen) Co.,Ltd.  
 Building# 6, Nanming Road, Gongming Town  
 Huahong Xintong Industrial Park  
 Guangming District  
 518108 Shenzhen  
 PEOPLE'S REPUBLIC OF CHINA

**General product information:**

This test report is based on a TUV SUD test report Ref. No. 095-1000015270-000 with appended CB cert Ref. No. DE 3-58818, evaluated to the requirements of IEC 60950-1:2005 2<sup>nd</sup> ed. + A1:2009.

This test report includes addition evaluation of the power supply to the requirements of IT power systems and an engineering evaluation of the Leakage at the output of the PSU.

The test report also includes an upgrade to IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013.

For continuity, data from the original TUV report is included in this report, along with the additional evaluation referenced.

These linear power supply models are open frame AC to DC power supplies. They have been evaluated for use in maximum ambient of 50°C. The units were loaded to 100% of normal rated load at 25 and 50°C ambient except for models F24-12, F15-15 and CP197, which @ 25°C convection cooling their rated loads are 75% (F24-12), 80% (F15-15 ) and 70% (CP197) of normal load. Maximum load is de-rated by 10% at 50 Hz input operation.

Evaluated power supplies do not include any mains circuitry other than the transformer. All Mains to Ground (Basic) and Mains to Secondary (Reinforced) shall be evaluated in the end use system.



**ELECTRICAL RATINGS:**

LFM = Linear feet per minutes

Model	Input (AC)			Output (DC)		Airflow
	V	A	Hz	V	A	LFM
F5-25/OVP	100/120/220/240	3/1.5	50/60	5	25	200
F15-15	100/120/220/240	6/3	50/60	15 or 12	15 or 16	250
F24-12	100/120/220/240	6/3	50/60	24 or 28	12 or 10	100
G5-35/OVP	100/120/220/240	4/2	50/60	5	35	100
CP197	100/120/220/240	6.5/3.25	50/60	5	50	300

**CONDITIONS OF ACCEPTABILITY:**

Model(s) require:

- 1) A reliable ground (protective earth) connection at end product.
- 2) A suitable electric and fire enclosure at end use.
- 3) Forced air-cooling @ 50°C ambient.
- 4) External fusing as specified in the installation instructions.

**Abbreviations used in the report:**

- normal conditions .....	N.C.	- single fault conditions.....	S.F.C
- functional insulation.....	OP	- basic insulation .....	BI
- double insulation .....	DI	- supplementary insulation .....	SI
- between parts of opposite polarity .....	BOP	- reinforced insulation.....	RI

Indicate used abbreviations (if any): .....None